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Structure and Organization of Agenda 21

Report of the Secretary-General of the Conference

INTRODUCTION

1. This paper has been prepared in response to decision 2/5 of the Preparatory Committee at its second session, which requested the Secretary-General of the Conference to "continue to develop his proposals on 'Agenda 21' for discussion at its third session, taking into account the views expressed in the discussion and the conclusions of the regional preparatory conference".

2. The purpose of this paper is to articulate a brief overview of Agenda 21 as it is now perceived by the Secretariat, and to introduce the Agenda 21 Action Programme papers which have been prepared for 10 different areas.

PURPOSES OF AGENDA 21

3. Agenda 21 is essentially a modified version of the action plans that have been endorsed by past United Nations Conferences. There are however some

significant differences which are reflected in its format and manner of presentation. These arise primarily from the extensive range and complex nature of the subject matter being addressed by UNCED as well as the requirement of the General Assembly resolution 44/228 and the Preparatory Committee that:

a. the environment and development aspects of each issue should be dealt with in an integrated basis;

b. cross-sectoral aspects of each issue must be examined separately and the results of these reflected in the comprehensive consideration of cross-sectoral issues themselves; and

c. the important linkages between each issue and other issues, which affect or are affected by it, must be identified in each case and their implications made clear.

4. Meeting these requirements dictates modifications in the format and manner of presentation of individual issues and the establishment of a framework for their presentation which makes these relationships clear. This would not be feasible in a simple listing of individual action proposals.

5. Agenda 21 is designed as a framework for the range of decisions to be taken by UNCED on a substantial number of recommended actions dealing with the various issues to be addressed by the Conference. However, if governments so decide, it could also be used as a means for monitoring and reviewing implementation of these decisions after the Conference. This would then in turn provide guidance to governments, agencies and other actors in the ongoing decisions they must take on implementation and revision of these actions during the remaining part of this decade e.g. 1993-2000.

6. It could also serve as an ongoing framework for action after the year 2000. Should this be decided, Agenda 21 would provide a continuing process and source of information to evaluate and adapt implementation of UNCED decisions and guide future decision-making. Although not legally binding in nature, approval of Agenda 21 by UNCED would represent a high degree of political commitment to it which would provide the basis for the necessary complementary and supporting action in the various other relevant organizations and fora to be involved in its implementation.

7. Agenda 21 would not in itself require establishment of any new organization. However, it will require that a decision be made as to where in the existing United Nations structure to locate the functions now being performed by the UNCED Secretariat and the information and experience that has been assembled through the UNCED process. Such a decision would undoubtedly require a significant addition to the capacities of the organization to which this responsibility is assigned. The functions in respect of Agenda 21 now being carried out by the UNCED Secretariat, and the information storage and processing facilities that support these functions, would be readily transferable to an appropriate permanent place in the United Nations.

THE OVERALL STRUCTURE OF AGENDA 21

Broad Mandate

8. The broad mandate of Agenda 21, as the action plan to be adopted by the Conference, would be based primarily on the principles of sustainable development incorporated in the Earth Charter. The starting point for Agenda 21 is the mandate established by General Assembly resolution 44/228 and the subsequent decisions taken by the UNCED Preparatory Committee. Based on these, it will articulate in respect of each of the issues addressed by UNCED, pursuant to resolution 44/228 the objectives required to achieve sustainable development through integration of environment and development and set out a series of actions designed to carry out these objectives. These action proposals, which are included as "Options for Agenda 21" in the accompanying documents, provide the primary ingredients or "building blocks" of Agenda 21 and they will be presented within a framework designed to facilitate the process of decision-making and action required to effect the transition to sustainable development.

Objectives

9. In each section of Agenda 21, as proposed, objectives are articulated which follow from the analysis of the issues and establish the basis for the action proposals in respect of these issues which follow, presented as "Options for Agenda 21".

Global Goals

10. In addition to the issue-by-issue objectives that are set out in each section it may be useful to consider a number of major "global goals" towards which the actions would represent important steps forward. These goals would define the broad directions to which the actions provided for in Agenda 21 would be aimed and provide a yardstick for determining priorities and evaluating progress. Agenda 21, as adopted by the Conference, would not be expected to include all of the actions required to meet these global goals, but to effect a significant and decisive movement towards their achievement.

11. The following are examples of the kind of global goals envisaged:

i) revitalize the economies of the developing countries; on a sustainable basis, reversing the outflow of resources from them and ensuring their access to the new and additional financial resources and technologies that will be required to incorporate the environmental dimension into their own development and participate fully in international development and environmental cooperation;

ii) eradicate poverty and ensure access by the poor to sustainable livelihoods and the requirements for human development;

iii) reverse the destruction of renewable resources - soils, water, forests, biological and genetic resources;

iv) ensure availability of energy supplies, particularly to developing countries, under conditions that will safeguard the environment and contain risks of climate change;

v) ensure universal availability and protection of water supplies;

vi) ensure food security on a sustainable basis;

vii) ensure equitable access to and use of the global commons by all Nations under conditions that will provide for their protection;

viii) effect changes in the system of incentives and penalties which motivate economic behaviour to ensure that they provide strong and positive motivation for sustainability;

ix) effect a transition to patterns of production and consumption in industrialized countries which will drastically reduce their currently disproportionate contribution to deterioration of the earth's environment and to global environmental risks;

x) stabilize global population and support each country in measures which enable it to achieve a sustainable balance between its population, its environment and resource endowment and the standards of life to which its people aspire;

xi) maintain the integrity of the earth's essential life-support systems and the principal ecosystems on which the survival and well-being of people depends;

xii) ensure a habitable and sustainable living environment for all.

12. The options for Agenda 21 actions could be displayed in relation to such broad global goals together with where feasible, specific targets which define steps towards these goals.

Linkages

13. This part of the Agenda 21 document will describe the linkages, or connections, between programmes, policies or institutions as they relate to the global goals described in the previous section and the original issues raised in the United Nations Resolution 44/228. As an example of linkages which are currently under consideration in each of the sectoral documents an interaction matrix has been prepared (Table 1). The Secretariat has initiated additional work on linkages and has commissioned a major study on linkages amongst the issues by the International Institute for Applied Systems Analysis (IIASA) with the support of the Government of Canada.

14. The most familiar linkages are those of a programmable and technical kind. These occur largely with respect to inter-sectoral activities, e.g. those readily recognized for the most part, and they have already attracted some institutional attention. Less clearly perceived are the linkages that span over-arching spheres of human activity, e.g. those between environment and development, between natural resources and basic human needs, between ecology and economics, and between environment and security. Then there are still broader-scope linkages such as those between economic efficiency and social equity, between the biosphere, the technosphere and the sociosphere, and between the present and the future. The focus in Agenda 21 will be on those linkages that are most relevant for the formulation, implementation, monitoring and assessment, of the action programmes it contains.

Programme Areas

15. The next element of Agenda 21 consists of the Programme Areas. Each of these involves targets articulating the specific end points which help achieve the global goals referred to in paragraph #10. Where possible these will be expressed in quantified terms. To enhance accountability, targets could be specified as intermediate steps over time to meet the ultimate target (e.g., a short term objective over the next 5-10 years versus a longer term goal by, say, the year 2025). As such the targets can therefore account for delays due to capacity building, technology development, and so on.

16. The discussions of the Preparatory Committee during the Plenary session and in the Working Groups will provide the basis for modifying, adding to, and deleting from, the options for action outlined in the documents prepared for PrepCom III.

17. Each programme area suggests activities to meet the specified targets. These activities should involve application of the various "enabling mechanisms" (e.g., economic instruments, integrated planning, institution building, etc.) required to meet the targets. Activities are directives that should be measurable (and therefore amenable to monitoring) and accountable over time. This means that for each action programme the Secretariat could specify who is responsible for carrying out the action (e.g., communities, each nation, industry, international agency, NGO's, etc.), when it should be carried out (e.g., next year, within 10 years, by 2000, etc.) and where it should be implemented (e.g., within each nation, regionally, river basins, urban areas, coastal zone, etc.), and how much it might cost.

18. Overall approval through the UNCED process will be sought for the action programmes developed within Agenda 21 to be followed by complementary and supporting action in other fora and organizations. They would therefore be non- binding in the legal sense but would carry a high degree of political commitment. Some programmes could be developed fully by the time of the Conference in Rio, while others would require agreement on necessary procedures after the 1992 Conference for their further development. Agenda 21 would also include some action programmes of a legally binding nature flowing from conventions and other legal instruments, e.g. conventions on climate change and biodiversity, which are developed in other fora but have important linkages with other Agenda 21 issues.

PRESENTATION OF AGENDA 21

19. As indicated above, the basic ingredients for "building blocks" of Agenda 21 are the action proposals identified as "Options for Agenda 21" in each of the sectoral and cross-sectoral issue areas. The rest is format and presentation. Because of the manner in which the underlying information and data have been assembled and stored, the Agenda 21 action programmes can be presented in a number of different formats (e.g. handbooks, documents, diagrams, computer data bases, video material, etc.) to facilitate its distribution, use and review throughout the United Nations system, international governments, inter-governmental and non- governmental organizations and other users and interested parties. In the limited time that remains before the 1992 Conference, it would not be feasible to develop all of these formats fully but, should the Conference decide to use Agenda 21 as an ongoing means of guiding and coordination of the action programme agreed at the Conference, the development of these various formats would clearly multiply its usefulness. In the meantime, some example of these will be available at PrepCom III and, in light of the guidance provided by the Preparatory Committee, could then be developed further by the UNCED Secretariat for presentation at the fourth Preparatory Committee meeting.

20. The computer based information system which has been established to support development and presentation of Agenda 21, which was referred to briefly in the report of the Secretary-General of the Conference to PrepCom II (A/CONF.151/PC/14/Annex I) makes it possible to present the action proposals contained in Agenda 21 in a number of different ways which, again, would facilitate its usefulness for a number of different purposes and by the different actors involved in its implementation. In all cases the starting point is the presentation of the issues in accordance with General Assembly resolution 44/228 and it should be stressed that in presenting the action proposals in these different ways, the proposals themselves remain the same. Only the manner of their presentation is varied. It is proposed that, initially, the contents of Agenda 21 be presented in the following ways:

a. By issue on the basis of the sectoral and cross-sectoral issues defined by General Assembly resolution 44/228;

b. By the global goals which they serve;

c. By sectors, e.g. agriculture, transport, energy, industry, etc;

d. By regions and perhaps sub-regions;

e. By the institutions and/or organizations principally involved in their implementation; and

f. By the primary constituencies which are involved in/or affected by the actions concerned, e.g. women, youth, educators, religious and cultural leaders, trade unions, indigenous people, etc.

The Secretariat is endeavouring to have a prototype of the data base which makes possible these presentational methods for PrepCom III so as to provide delegates with the opportunity to observe it in operation.

ACTION PROGRAMMES FOR PREPCOM III

21. Action proposals, consisting of action programmes, or in some cases policy guidelines have been developed for consideration of PrepCom III for each of the major sectoral and cross-sectoral issue areas. These are presented in separate documents, each headed "Options for Agenda 21" and have been numbered in a specific sequence for ease of review by the Preparatory Committee. The titles of these are listed in annex I.

22. It should be pointed out that it has not been feasible in the time available to rationalize each of the action proposals and make them fully consistent with each other or to elaborate fully all relevant linkages and cross- sectoral dimensions. The overlaps and inadequacies reflected in these documents will be reconciled following PrepCom III, based on the decisions and guidance it provides in respect of Agenda 21.

23. The action proposals presented in each of the "Options for Agenda 21" documents prepared for Working Group I and II follow the following basic format:

a. Basis for Action - a brief introduction to the rationale for the proposed action programme. Where possible, this is a summary of the analyses presented in the background documents for the sector;

b. Objectives - for each issue area, programme specific objectives and targets are described. By PrepCom IV these targets could, where possible, be expressed in quantitative terms over time to facilitate future evaluation and accountability. However for PrepCom III such quantification was not possible for most programmes;

c. Activities - fairly detailed descriptions of the options for action to meet the stated objectives. Where possible the activities are directed towards a specific institutional level (e.g., national government, international organization, etc.) who could either take responsibility for the activity, or coordinate it.

24. In the final Agenda 21 document additional sections will be presented for each selected programme including financial requirements, national and international institutional implications, linkages to other sectors/issues/regions, and indicators for monitoring.

25. The actions described in the Agenda 21 documents comprise a mixture of measures from specific establishment of targets to recommendations on financial instruments, technology development and transfer, and institutional development. In some cases these activities could become components of a broader set of agreements emerging out of parallel processes complementary to UNCED (e.g., Framework Convention on Climate Change). In other cases these activities could be relevant only to a particular sector and are therefore best left in the sectoral programme.

26. The options for action in the principal cross-sectoral areas of finance, technology transfer and institutions, which it is proposed have separate

places on the Conference agenda because of their special importance, will be based to a large extent on the analyses and proposals arising out of consideration of each of the sectoral issue areas. They will thus be presented separately although this should not prevent them from being treated as integral parts of Agenda 21. All those other cross-sectoral issues which are not treated separately in the Conference agenda would, of course, be integrated fully into Agenda 21.

27. The Preparatory Committee may consider the proposed structure of Agenda 21 as outlined above and provide direction and guidance to the Secretariat, on the basis of which it can be further developed and presented in a form in which the Preparatory Committee can take final decisions concerning at its fourth session.

ANNEX I

Options for Agenda 21

A/CONF.151/PC/42/Add.1	Protection of the Atmosphere: Options for Agenda 21
A/CONF.151/PC/42/Add.2	Protection and Management of Land Resources: Options for Agenda 21
A/CONF.151/PC/42/Add.3	Conservation and Development of Forests: Options for Agenda 21
A/CONF.151/PC/42/Add.4	Conservation of Biological Diversity: Options for Agenda 21
A/CONF.151/PC/42/Add.5	Biotechnology: Options for Agenda 21
A/CONF.151/PC/42/Add.6	Protection of Oceans, all kinds of seas including enclosed and semi-enclosed seas, coastal and the protection, rational use and development of their living resources: Options for Agenda 21
A/CONF.151/PC/42/Add.7	Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources: Options for Agenda 21
A/CONF.151/PC/42/Add.8	Environmentally Sound Management of Toxic Chemicals: Options for Agenda 21
A/CONF.151/PC/42/Add.9	Environmentally Sound Management of Hazardous Wastes: Options for Agenda 21
A/CONF.151/PC/42/Add.10	Environmentally Sound Management of Solid Wastes and Sewage-Related Issues: Options for Agenda 21

Table 1. - Interaction matrix showing the main linkages that have been considered between each of the 44/22B based sectoral issues. The entries are not meant to be an exhaustive list of all of the possible linkages. The matrix should be read from the row to the column. In other words, how does the row 'sector' impact/link to the column sector. Therefore each 'sector' (except toxic, chemical and solid wastes) are repeated as both a row and a column to capture linkages in both directions.

	ATMOSPHERE	LAND/AGRICULTURE	FOREST	OCEANS	FRESHWATER	BIODIVERSITY	BIOTECHNOLOGY
ATMOSPHERE		-Drought -Precipitation and temperature patterns impact on crop and biota production. -pollutants on crop & biota production. -UV radiation inputs on crops and biota	-Precipitation and temperature patterns effects on forest survival. -Soil moisture. -Acid deposition effects on forest growth.	-Sea level rise. -Ocean warming. -Ultraviolet radiation effects on biota. -Acid rain effects on ocean systems.	-Long-range transport of toxic and acid rain. -Precipitation and temperature patterns -Consumption use for cooling energy systems	-Species loss due to climate effects. -Location of protected areas due to climate. -Change in habitat structure due to climate -Acid deposition impacts on species survival. -Ozone links to ultraviolet effects on biota.	
LAND,SOILS AND AGRICULTURE	-Methane and nitrous oxide releases from agriculture. -Energy use in agriculture -Reduced CO2 sinks due to vegetation removal	-Desertification. -Landuse planning. -Population and activity distribution	-Clearing of forest to create cropland.	-Coastal erosion and siltation due to mismanagement. -Destruction of nesting grounds -Agro-chemicals pollution of coastal zone.	-Siltation. -Agro-industry chemicals contaminating water -Competition for water use from agriculture	-Loss of habitat. -Man made cultivars contribute to widening gene pool	-Biota as source of germplasm for genetic engineering
FORESTS	-Deforestation releases of CO_2 & CO. -Forest death releases of CO_2. -Reduced CO_2 sink due to deforestation. -Releases of CH4	-Land degradation after deforestation -Agroforestry -Forests as protective factor -Land use conflicts		-Siltation due to erosion. -Destruction of mangrove fish and marine mammal habitat.	-Deforestation effects on river runoff & flow -Downstream nutrient enrichment through leaching -Sediment accumulation in reservoirs -Riparian habitat for fish	-Habitat alteration -Forest as species "store-house". -Species loss due to deforestation. -Protected areas for wildlife	-Biota as source of germplasm for genetic engineering ,
OCEANS	-Carbon sink -Degradation of plankton as carbon sink. -Regulator of global weather.	-Alternate source of food. -Climate mitigation in coastal areas. -Loss of land due to sea level rise.	-Marine pollution effects on mangroves			-Marine pollution impacts on ecosystems & species -Harvesting of endangered marine mammals and turtles. -Damage to fragile marine ecosystems -Diverse ecosystem	-Biota as source of germplasm for genetic engineering
FRESHWATER		-Water as limiting factor on food production. -Contaminated water effects food crops	-Inundation of forest areas -Pollutant effects on forest survival	-Sediment transport. -Salinity changes due to water flow alterations. -Ecosystem alteration -Chemicals and waste transported by freshwater systems.	-Altered water flows & implications to waste disposal. -Industrial effluents impacts water quality	-Water borne pollutants from land based activities impacting biodiversity.	

	ATMOSPHERE	LAND/AGRICULTURE	FOREST	OCEANS	FRESHWATER	BIODIVERSITY	BIOTECHNOLOGY
BIODIVERSITY		-Loss of cultivars species. -Loss of Soil organisms -Affects fertility	-Loss of species for forestry and habitat. -Loss of forests & supported wildlife. -Maintenance of ecosystem function	-Maintenance of ecosystem function	-Maintenance of ecosystem function		-New medicines. -New chemicals. -Genetic resources. -Improved food crops
BIOTECHNOLOGY		-Increased food production through specialized crop species. -New crop varieties for increased production & rehabilitation -Release of modified organisms	-Increased production by improved varieties of seedlings. -Maintenance of gene pool.	-Uncontrolled manipulation of species. -Artificial selection of species. -Increased fish production by improved varieties of stocks	-Increased fish prod'n by improved varieties of stocks	-Protection of genetic resources -Creation of new species and varieties	
TOXIC CHEMICALS	-Fumes from factories -Industrial Accidents -Inappropriate incineration causing toxic releases to atmosphere. -SOx emissions	-Land contamination into food chain.		-Disposal in oceans. -Biological uptake and contamination. -Accidents & spills. -Pollution effects on coastal zone	-Surface & groundwater contamination from inadequate disposal -Accidents & spills -Pollution from industrial activities	-Pollution effects on biodiversity	
HAZARDOUS WASTES	-CFC releases and ozone depletion.	-Land contamination into food chain. -Persistent effects on health		-Oceans disposal -Accidental spills destroying fragile marine ecosystems. -Pollution effects on coastal zone	-Water contamination from poor disposal	-Pollution effects on biodiversity	
SOLID WASTES	-CH4 & CO2 releases from land-fills. -Particulate releases	-Land contamination. -Elimination of land for alternate uses -Recycling of organic wastes as fertilizer	-Conservation through waste recycling	-Improper land fills. -Plastics from improper disposal. -Pollution effects on wetlands & coastal zone	-Surface/groundwater pollution. -Eutrophication from land fills & sewage	-Pollution effects on biodiversity	-Biotechnology for waste conversion -Industrial waste treatment

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PROTECTION OF THE ATMOSPHERE: OPTIONS FOR AGENDA-21

Report of the Secretary-General of the Conference

INTRODUCTION

1. This paper was prepared by the Secretariat in response to the decision of the Preparatory Committee at its second session, in which the Secretary-General was requested "...to investigate further the interconnections between the issues of climate and environmental and developmental...and cross-sectoral issues, and to report to the Preparatory Committee at its third session, in order to enable it to consider at that session the preparation of related proposals for discussion at the United Nations Conference on Environment and Development". 1/

2. As explained in the background paper 2/, the main atmosphere issues are linked to each other, to other issues, and to sectors. Background papers on Transboundary Air Pollution 3/ and on the Protection of the Ozone Layer 4/ have now been prepared. As the key sources of climate change, and other atmosphere-related problems are the sectors using and converting fossil fuels, the major response options lie in this area. This paper suggests possible response options for Agenda-21, concentrating on the energy sector. Options for areas, such as Oceans, Forests, Agriculture and Water are available in other papers prepared for the Preparatory Committee.

3. Energy is necessary for development. Its production and use, however, are the sources of the most serious local, regional and global environmental problems, and consequently are constraints to sustainable development. The

overall environment-development objective requires that sufficient energy be available in forms that are environmentally sound. Energy efficiency measures, the promotion of environmentally sound energy systems, and programmes to reduce wasteful energy consumption patterns are essential in the achievement of these objectives.

4. It is recognized that some of these objectives cannot be accomplished overnight, especially in the developing countries. Current energy consumption levels are so low in some of them that increased energy use will be essential, even to attain basic standards of economic welfare.

5. The paper starts with overall Atmosphere-wide Objectives, followed by five Proposed Programme Areas. A number of actions are listed under each programme area. More details concerning these actions will be developed by the fourth session of the Preparatory Committee. Many of the objectives referred to in this paper will either be negotiated by or coordinated with the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change. Close cooperation of the UNCED preparatory process with the INC process, thus continues to be important.

6. There needs to be sufficient funds available, especially for the developing countries, to enable the transition to a more sustainable energy future, especially through capacity building, technology development and transfer. New ways of raising large amounts of funds need to be found, and existing financial institutions need strengthening. Some of these issues are dealt with in this paper, under each of the proposed programme areas. Others are dealt with in the cross-sectoral papers prepared for the Preparatory Committee on financial resources and technology.

ATMOSPHERE-WIDE OBJECTIVES

7. Some of the atmosphere-wide objectives are now under negotiation in other fora. Their full quantification needs to wait for these processes to conclude. However, actions which could contribute to those objectives can be initiated even now. Other, longer term objectives will need to be developed by the Preparatory Committee.

GHG/Ozone Depleting Substances Emissions Limitations

8. Commitments for greenhouse gas emissions and sinks, as negotiated by the Intergovernmental Negotiating Committee.

9. Commitments for ozone-depleting substances, as negotiated and agreed under the Montreal Protocol.

Reducing Air Pollution

10. Commitments for emissions of SOx, NOx, and VOCs, as exemplified by the protocols to the Convention on Long Range Transboundary Air Pollution (LRTAP), and further efforts for reducing emissions of toxic heavy metals and persistent organic compounds.

11. Development of authoritative guidelines for ambient air quality, taking into account human health risks and, as appropriate, other environmental risks of major air pollutants.

12. Efforts by developing countries to reduce human exposure to excessive air pollution (including indoor) from domestic biomass and fossil fuel burning, especially as it affects women and children.

PROPOSED PROGRAMME AREAS:

13. The following major energy-related programme areas are proposed as options for consideration by the Preparatory Committee;

PROMOTING THE ENERGY TRANSITION
INCREASING ENERGY EFFICIENCY
PROMOTING ENVIRONMENTALLY SOUND ENERGY SYSTEMS
PROMOTING SUSTAINABLE ENERGY CONSUMPTION PATTERNS AND LIFE STYLES
ADDRESSING THE UNCERTAINTIES: THE ATMOSPHERE

14. Each of these will help in the achievement of one or more of the Atmosphere-wide Objectives, as well as for other issues. Within each programme area, a number of actions will need to be undertaken. A number of these need to be undertaken for more than one programme area.

A. PROMOTING THE ENERGY TRANSITION

Basis for Action

15. A number of actions will be required to support the overall transition to a more sustainable energy future, independent of the fuel source, or the energy consumption sector concerned.

Objectives

16. Countries and international organizations could take steps to ensure that data and information required for the energy transition will be developed, and made available.

17. Countries and international organizations could ensure the availability of capacity, especially in developing countries to undertake the necessary technical, research, development and implementation measures.

Activities

18. National Energy-Environment Accounts are key prerequisites for understanding the energy system, and preparing policy interventions for increased energy efficiency, and other energy sector activities.

a. Country-level energy-environment accounts, coordinated at the regional level, as appropriate, could be developed, and made widely available [by 1995-1997].

b. Countries could make available by the same dates, detailed studies of the costs of different energy paths, particularly in respect of greenhouse gas reduction strategies.

c. The relevant United Nations bodies could coordinate the development of methodologies for country-level integrated energy-environment accounting, promoting harmonized data presentation and analysis.

19. Least-cost Energy Planning can be useful for making cost-effective choices.

a. Least-cost energy planning could be adopted by countries, and promoted in the private sectors using real cost prices, with a longer term aim of using full economic and environmental costs.

20. Pricing and other Economic Mechanisms will be essential elements:

a. Governments and United Nations and other international organizations could, in collaboration with the private sector, promote policy research on, and implementation of, measures to achieve energy-related objectives by utilizing market, competitive and pricing mechanisms (e.g taxes, tradeable entitlements, incentives and disincentives, etc.), and could exchange information on the relative effectiveness of various policies and techniques.

21. Education and Information concerning the role of, potentials for, and different possibilities of energy efficiency are crucial, both at national and international levels.

a. Education and awareness raising programmes concerning energy efficiency, environmentally sound energy systems, could be introduced or intensified in all countries.

b. The relevant United Nations bodies, in cooperation with Governments and NGOs, could intensify efforts at collecting, analysing and disseminating to key target groups relevant information.

22. Capacity building will be crucial to allow developing countries to develop and implement environmentally sound energy technologies and system, at local regional and national levels.

a. The relevant United Nations bodies and international donors, in cooperation with Governments and NGOs, could provide substantially increased technical and financial assistance to developing countries to building up their technical managerial, planning and administrative capacities to enable them to develop, and implement environmentally sound energy systems.

23. Changes to Existing and New Mechanisms of technical and financial assistance are needed at national, regional and global levels. Within the

United Nations, as there is no lead agency responsible for energy, there are two options: strengthening of the existing, diverse capacities, and creating new coordinating or implementing institutions.

a. The United Nations could mandate an independent, high-level energy efficiency commission, to undertake advocacy role at the international level on energy efficiency and environmentally sound energy systems.

b. United Nations System activities presently dealing with energy need to be strengthened, to ensure that efforts are concentrated on increased environmentally sound energy system utilization.

c. The United Nations could set up a new institution to deal with energy. A number of options are possible, including:

(1) United Nations Energy Co-ordination Unit, with small secretariat, improving coordination of energy-related activities;

(2) Central United Nations Energy Programme, with modest funding, with catalytic, coordinating role;

(3) Central United Nations Energy Agency, with large funding, undertaking the whole spectrum of energy-related activities;

d. Relevant United Nations bodies could set up "collaborating centers" with existing or new governmental or non-governmental institutions to assist countries and United Nations agencies to implement environmentally sound energy activities.

e. Countries could ensure that public financial institutions, at the national and international level, review their programmes to determine the extent to which the are contributing to or promoting investments that encourage the use of environmentally sound energy systems.

B. INCREASING ENERGY EFFICIENCY

Basis for Action

24. While energy efficiency is now widely regarded as a key area for action in all countries, and because it has the technical potential for producing quickly, multiple and permanent environmental and economic benefits, it has to be pursued much more vigorously than hitherto.

Objectives

25. Each country could increase its institutional capacities and policy focus to support the management of energy demand and, where appropriate, the reduction of fossil fuel use or its growth per unit of output in the major energy-using sectors.

Activities

26. Setting targets and developing legislation, regulations and other institutional arrangements will be crucial for promoting energy efficiency, and environmentally sound energy systems, both at the national and international levels.

a. Countries could set energy efficiency standards on specific technologies and for economic sectors, as appropriate. These could be coordinated at regional levels, where relevant.

27. The transport sector raises in particularly acute form the conflicts between energy, environment and development and the wide ranging responses that might be applied to them. Given the importance of the automobile as an energy (fossil) user, and as a major polluter, automobile efficiencies and emissions must be the focus.

a. The relevant United Nations bodies, in cooperation with regional organizations could invite, through an international conference, major motor vehicle [aircraft and ship] manufacturers to agree on progressively increasing fuel performance and emission standards, to be harmonized between different transportation sectors where appropriate.

b. Countries could set up their own national fuel performance and emission standards, to be coordinated regionally or globally, as appropriate, and to be compatible with internationally accepted criteria and norms.

c. Countries could introduce, or strengthen pricing, and other economic mechanisms, which discourage large fuel-consuming and polluting vehicles and encourage alternative fuels.

d. Countries could review the means at their disposal to promote more efficient and less polluting mass transit, and prepare appropriate plans to implement these.

e. Countries could promote life styles and economic activities which require less travel, through improved telecommunications, and appropriate spatial redistribution of living/working space.

C. PROMOTING ENVIRONMENTALLY SOUND ENERGY SYSTEMS

Basis for Action

28. Most of the energy produced and used today is done in unsustainable ways. We must move toward a transition to Environmentally Sound Energy Systems (ESES). On the one hand, we must use the conventional energy sources, such as fossil fuels, nuclear energy, traditional biomass, etc., in ways which respect the environment. There is a considerable scope for improvement in all the sectors. More importantly, we must pursue vigorously the path to increased reliance on renewable, environmentally sound energy systems.

Objectives

29. The long-term objective is to implement an energy transition from the present fossil-fuel-based culture to one relying on environmentally sound energy systems (ESES). During the transition, fossil fuels will continue to be important. It is essential that new developments employ the most efficient and least polluting technologies.

30. Countries could set objectives of increasing the percent and absolute contribution of ESES to the supply mix. Regional and global indicative targets could also be set, and national and international figures for reliance on ESES could be made available. Countries could also set objectives for increasing reliance on specific renewable ESES, such as biomass, or solar.

31. An additional objective is to increase the amount of money devoted to research and development for ESES, both in absolute terms, and relative to the amount spent on conventional energy. The long-term objective is to reverse the present trends where most money is spent on conventional energy systems.

Activities

32. Setting Targets in the renewable ESES area will be crucial for success, both in terms of the desired level of use, and in terms of financial and other commitments of Governments to reach those targets.

a. The relevant United Nations bodies, in cooperation with Governments and NGOs could develop mutually agreeable criteria, on a national or regional scale, as appropriate, for the classification of energy systems as environmentally sound (ESES).

b. Following evaluation, countries could classify their energy supply systems, and set up targets for ESES's contribution to the overall supply mix, both in absolute and in percentage terms.

c. Countries, as well as regional and international bodies, could agree to review research priorities to ensure substantially increased funding to research and development on ESES, particularly on renewable energy systems, to a level where ESES receive the majority of R&D funding by [2000].

d. Developing countries could promote alternatives to fuelwood, where it's use causes unsustainable environmental stress.

D. SUSTAINABLE ENERGY CONSUMPTION PATTERNS AND LIFE STYLES

Basis for Action

33. Basic energy service needs of a large number [, millions] of people are not being met. There must now be a concerted effort to provide everybody with sufficient energy services for sustainable livelihoods.

34. At the same time, some of the critical global and regional environmental problems stem from an overuse of energy. While there is no "energy shortage" as such, the overall price (environmental, extraction, political, etc.) we have to pay for additional energy supplies is increasing, and there are plenty of reasons why limiting consumption of energy resources will have beneficial impacts. Consequently, there is need for rationalizing and containing energy consumption at the global level.

Objectives

35. Countries could develop indicators for Basic Energy Service Requirements, make them an integral part of conditions for sustainable livelihoods, and develop plans for everybody to have access to these.

36. Countries could develop indicators for [Maximum] [Sufficient] Energy Service Requirements, and plans to not go beyond these requirements.

Activities

37. A number of actions will be required, both to increase access to energy services for some, and reduce overall consumption levels of others. Many of the actions outlined in the "Energy Efficiency" section would also be useful for consumption reduction strategies. In addition:

a. Countries could immediately undertake end-use energy surveys, to establish indicators of Basic and [Maximum] [Sufficient] Energy Service Requirements, and the number of people, households, industries, who are below and above. The information could be made widely available.

b. Countries could develop and implement programmes, with assistance from the relevant United Nations bodies, regional organizations, donor agencies, and NGOs to ensure that in a given time-frame, everybody has access to the basic requirements.

c. Countries could introduce incentives to reduce the number of people, households, industries who are above the [Maximum] [Sufficient] Energy Service Requirements.

d. Countries could support initiatives promoting clean technologies, waste minimization and recycling with a view to reducing energy consumption and greenhouse gas emissions.

E. ADDRESSING THE UNCERTAINTIES: ATMOSPHERE

Basis for action

38. Substantial knowledge of the atmosphere has been gained through international cooperation and exchange of data and information to all nations. However, concern with climate change, air pollution, and ozone depletion has created new demands for scientific information. Better understanding of physical and chemical properties of the atmosphere is needed,

through expanding and strengthening research programmes, developing comprehensive observing systems to monitor the atmosphere and the climate system as a whole, and to detect trends, variations and changes of the atmospheric behavior in a timely manner.

Objectives

39. Countries could agree to promote cooperation in conducting research to improve the understanding of the physical, chemical, biological, economic and social processes that influence the Earth's climate system (e.g., oceans, land, atmosphere & biosphere) at global and regional scales.

40. Countries could agree to promote developing and maintaining systematic observations of the climate system, in particular through the Global Climate Observing System (GCOS).

41. Countries could agree to preserve, and collect data and information on the atmosphere and the climate system as a whole, and to exchange these data and information to the fullest extent possible.

Activities

a. The relevant United Nations bodies, in cooperation with Governments, industry, research institutions, and NGOs could identify priority areas of scientific, technical, and socio-economic research and particularly the critical linkages to atmosphere and climate needed to support decision making, and ensure implementation.

b. Countries could promote process of free, unrestricted exchange of data and information related to the atmosphere and climate.

c. The relevant United Nations bodies, in cooperation with countries and NGOs could promote cooperation in the development of early warning systems concerning changes in the climate system.

Notes

1/ Decision 2/8 of the 3rd session of the UNCED Preparatory Committee (A/46/48).

2/ Protection of the Atmosphere: Sectoral Issues (A/CONF.151/PC/xx).

3/ Protection of the Atmosphere: Transboundary Air Pollution (A/CONF.151/PC/xx).

4/ Protection of the Atmosphere: Protection of the Ozone Layer (A/CONF.151/PC/xx).

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PROTECTION AND MANAGEMENT OF LAND RESOURCES: OPTIONS FOR AGENDA 21

Report of the Secretary-General of the Conference

I. INTRODUCTION

1. This paper was prepared in response to the decision 2/5 of the Preparatory Committee at its second session, on the Report of the Secretary-General of the Conference, in which the Secretary-General was requested "...to continue to develop the proposals on 'Agenda 21' for discussion at its third session, taking into account the views expressed in the discussion and the conclusions of the regional preparatory conferences". The paper also responds to decision 2/11 on protection and management of land resources, which welcomed the proposals for the development of an integrated approach to the protection and management of land resources...and requested the Secretary-General... to develop these...proposals further..."

2. In complying with this request, the Secretariat of the Conference has identified a number of actions that could be used as a contribution to Agenda 21, and which respond to the main issues which have been discussed in relation to land resources in background papers at both the past and current session of the Preparatory Committee. These include the application of an integrated approach to the protection and management of land resources (A/CONF.151/PC/24 and A/CONF.151/PC/61); combating desertification and drought and other forms of land degradation (A/CONF.151/PC/62); the promotion of sustainable agriculture (A/CONF.151/PC/26 and A/CONF.151/PC/); and alternative sustainable systems of production (A/CONF.151/PC/25).

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3. Land is defined as a complex system, and includes its topography, dimensions and spatial nature; its soils, minerals, water and biota. Biota includes plants, animals and microorganisms in all their diversity. Land and its components are organized in terrestrial ecosystems which provide a variety of functions and services, such as the breakdown of wastes, the formation of soils, the moderation of water flows or the pollination of plants. Land and land related processes are also an important component of the global biogeochemical cycles, and, as such, linked to global climate, the weather and other atmospheric phenomena.

LINKAGES BETWEEN LAND RESOURCES AND OTHER ENVIRONMENT AND DEVELOPMENT ISSUES

4. The identification of interactions and linkages between land and the components that form it, as well as with the various economic and social factors and with the cross-sectoral issues is important because it allows to determine which are the main areas where problems lie and where remedial action must be addressed. The most important of these has been described elsewhere in somewhat greater detail (see document on Protection and Management of Land Resources: The Elements of an Integrated Approach A/CONF.151/PC/63). Suffice it to say here that, when proposing options for the development of Agenda 21, the links between land resources and other environmental, social and economic issues have been addressed.

5. Because of its complexity and systemic nature, land resources should be considered in an integrated manner, as this is the only way in which interactions and linkages can effectively be addressed. Considering the land system as a whole at the conceptual and planning level does of course not preclude that, at the management level, land resources may be subdivided into various discrete sectors for the sake of convenience, (e.g. forests or water) or a combination of these, as occurs in economic activities such as agriculture.

6. Following this pattern, papers before the Preparatory Committee deal with the various land based resources on an issue by issue basis, but on the assumption that the overall approach to land resources would most appropriately be integrated. Also the programmes for each of these resource areas would have to be integrated and coordinated at the time of implementation. At present, there is a considerable overlap in proposed programmes, but this has been cross-referenced.

II. OPTIONS FOR AGENDA 21

7. Because of the nature and breadth of the land resources issue, many of the essential programmes that will contribute to reaching the issue-wide goals are presented elsewhere, as is the case for forests, water and biological diversity in particular.

LAND RESOURCES WIDE OBJECTIVE

8. The broad objective for land resources is to protect and manage the land system so that it provides the resources, goods and services to satisfy human needs in a sustainable manner. This entails the management of both the land

as a system as well as of the individual resources that constitute it. The specific goals for individual land resources include the protection of soils from loss and degradation to ensure their continued productivity; those concerning water, forests and biological resources and diversity, are dealt with elsewhere.

PROPOSED PROGRAMME AREAS

9. The present document suggests, for the consideration of the Preparatory Committee, options for action in three major clusters of programmes, namely:

a. PROTECTION AND MANAGEMENT OF FRAGILE ECOSYSTEMS

b. INTEGRATED APPROACH TO PLANNING AND MANAGEMENT OF LAND RESOURCES

c. SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

10. Each of these clusters of programmes areas will contribute to the achievement of one or more of the Land Resources goals, in the same manner that programme areas for water, forests and biological diversity will also contribute. In turn, the programmes presented here will assist in the achievement of the goals for those areas. Within each of the major clusters presented below a number of subprogrammes and activities will need to be undertaken.

A. PROTECTION AND MANAGEMENT OF FRAGILE ECOSYSTEMS

Basis for Action

11. Fragile ecosystems, such as arid lands, mountains or certain coastal areas, are important ecosystems, with unique features and resources. Some, such as mountains or wetlands provide important services to areas far removed from the immediate ecosystem. They are areas of important cultural diversity and storehouses of valuable indigenous knowledge. Together, in spite of the fact that they are sparsely populated, they are the home to a substantial proportion of the earth's population and provide varied opportunities for human livelihoods. Yet because many of these areas have a limited productivity, or are marginalized politically, they have not received the attention they merit. This is something the proposed programme seeks to remedy.

12. In spite of the general lack of attention, a number of initiatives already address, or are being planned to address, the issue of protection and management of fragile ecosystems. These include the United Nations Plan of Action to Combat Desertification or the Wetlands Programme of the IUCN in the first category, or the Mountain Agenda currently being prepared by a consortium of interested organizations in the second. The subject of coastal area management is dealt with at length in the Agenda for Oceans. Options for action could be based on these programmes. The general options presented at this stage will be spelt out on the basis of the Preparatory Committee's discussion on desertification and coastal areas in this session.

Objectives

13. The broad objective for fragile ecosystems is to manage the development process so as not to harm the resource base but to preserve, protect, rehabilitate and enhance the ecosystem and natural resources so that they can satisfy human needs on a sustainable basis.

Activities

14. As stated, only the most general strategic directions will be defined here, with the understanding that they can be further developed later on the basis of the results of the current initiatives. The main focus could be the simultaneous protection of the resource base and the management of the development process through:

a. building up the knowledge and information base;

b. management of the development process in ways that do not damage the prospects for sustainability;

c. rehabilitation of damaged environments;

d. preservation of areas of special interest or important functions;

e. building up the institutional basis;

f. development of human resources;

g. pilot projects that refine and test the feasibility of implementing sustainable development strategies that combine environmental protection and development functions;

B. INTEGRATED APPROACH TO PLANNING AND MANAGEMENT OF LAND RESOURCES

Basis for Action

15. Land resources are used for a variety of purposes which interact and may compete with each other, therefore it is desirable to plan and manage all uses in an integrated manner. Integrated consideration facilitates appropriate choices and trade offs, thus maximizing sustainable productivity and use. Opportunities to allocate land to different uses arise in the course of major settlement or development projects or in a sequential fashion as lands become available on the market. A number of techniques and processes can be combined to facilitate this integrated consideration. Many of its elements already exist, but need to be more widely applied, further developed and strengthened.

16. The most important strategic directions that could be pursued are described below. The initiatives and programmes flowing from these strategic directions include work on both the theoretical and practical aspects, and can be carried out by national Governments and with the assistance of the international community. The description is of a very general nature for the moment, in order not to preempt the various current initiatives both within the preparatory process, as well as in association with it, to develop various

of these elements into full fledged programmes. Among these, one can mention work on assessment and information systems, economic instruments, legal measures, land use planning for agriculture and settlements and others.

Objectives

17. The broad objective is to facilitate allocation of land to the uses that provide the greatest sustainable benefits. This would require to set in motion a process that allows to bring together in a common framework all the different elements that make this possible. This includes the building up of the base of knowledge and information on land resources and their sustainable use; the development of appropriate institutions and policy instruments; putting in place incentive systems for better land use; the development of responsive planning and management structures and approaches; further development of the tools to support the planning and management system; the development of the necessary human resources to carry out these tasks, and finally, providing adequate financial resources.

Activities

18. A variety of options are available for actions and activities that can contribute to the achievement of the broad objectives and goals described. While they are here described at the level of activities, it is apparent that these options could each be developed into full fledged programmes. In fact, a number of initiatives and major programmes already exist in these areas or are in the process of being developed. To name just one example, the Global Environment Monitoring System (GEMS) of the United Nations, which contributes data to the information base on land resources and the Global Resources Information Database (GRID). The main options for action fall within the following categories:

19. Understanding the land resources system and the implications for sustainable development of land resources is the basis for making wise decisions in this area and for ensuring that the uses and management practices are indeed sustainable over the long term. The main route to accomplishing this is through research and pilot projects. Various elements could be included:

a. clarification of ecosystemic interactions and interactions between land resources and social, economic and environmental systems;

b. development of specific indicators of sustainability; development of a composite index of sustainability; research and evaluation of the operational significance of the indicators of sustainability and translation into management techniques;

c. definition of the environmental, economic, social, cultural and political determinants of sustainability in local circumstances.

20. Development of more appropriate institutions and policy instruments is the key prerequisite for setting in motion and institutionalizing the process of approaching land resources issues in an integrated manner. This could involve:

a. strengthening the institutional structures, including coordinating mechanisms that assist in the development and application of integrated approaches to the protection and management of land resources;

b. strengthening of the legal framework and regulations related to development and protection of land resources; improvement of enforcement procedures;

c. further development of economic instruments that assist in the protection and management of land resources;

d. development of improved incentive structures to support appropriate land use;

e. further application of procedures to facilitate participation of all actors in the decision-making and implementation process; development of innovative approaches that allow more direct and active participation at all levels;

d. institutionalizing an integrated approach to land resources, which would entail the building up of all the institutional structures, machineries and processes at the national level.

21. Development of a more responsive and appropriate planning and management system is another element in the putting in place of an improved system for decisions on land resources. This would take place essentially at the national level, and could involve, among other things, setting in place policies, procedures and bodies for land use planning at the national, regional and local levels.

22. Improvement and further development of the tools to support the planning and management process is an essential action, without which decisions on land use can not be appropriate. In all cases actions here should be supported by research, pilot applications, wide dissemination of experiences and training. Application at the national level is the end point, and this process can greatly be assisted by the international community, which has a major support role to play. The main elements could include:

a. strengthening of existing assessment systems including those to gather environmental, economic and social data at the global, regional, national and local levels; and development of new systems where necessary; development of improved and compatible systems for integration, analysis, interpretation and presentation of data;

b. improvement and wider application of techniques and procedures for assessing impacts, risks and costs and benefits of specific actions;

c. further development and application of methods to assign values to environmental resources; further development and wider application of methods for resource accounting;

d. strengthening of existing methods for environmental and developmental management; research on and application of appropriate traditional and indigenous methods; development of new alternatives to existing systems and methods; research and development of new and improved methods, techniques and inputs to the development and management of land resources; wide dissemination and application of alternatives.

23. Strengthening and building the capacity to act is fundamental, without which none of the above actions can take place. Action in this area would entail the setting up of a massive and concerted effort for education and training and the transfer of technologies and techniques.

24. Conducting research, developing pilot projects and exchanging experiences on the process of integrated planning and management and of the results obtained would be useful.

C. SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

Basis for Action

25. The options for action presented here are based on the proposed International Cooperative Programme Framework for Sustainable Agriculture and Rural Development (ICPF/SARD) prepared by FAO. A full version is held by the UNCED Secretariat. This programme is in turn based on the Den Bosch Declaration and Agenda for Action for Sustainable Agriculture and Rural Development agreed at the FAO/Netherlands Conference on Agriculture and the Environment (Den Bosch, 15-19 April 1991). This Conference called for an international cooperative programme to meet the needs of SARD at national and international levels, and the FAO is at present taking steps to develop this programme in detail.

Objectives

26. The programme area could have three essential objectives, namely (a) food security by ensuring an appropriate and sustainable balance between self-sufficiency and self-reliance; (b) employment and income generation in rural areas, particularly to eradicate poverty; (c) natural resource conservation and environmental protection.

Proposed programme areas

27. A first approximation is made here of a comprehensive programme framework to meet these three objectives, for the consideration of the Preparatory Committee:

C.1 Sector policy review, planning and programming;

C.2 People's participation and development of human resources:

C.3 Integrated production systems management and diversification of rural incomes;

C.4 Land Resources Conservation and Management, including two subprogrammes on land use planning and land conservation and rehabilitation; 1/

C.5 Water resources for agriculture; 2/

C.6 Genetic Resources for Agriculture, including two subprogrammes on plant genetic resources and animal genetic resources; 3/

C.7 Integrated Pest Management for Agriculture; 4/

C.8 Sustainable Plant Nutrition; 5/

C.9 Rural Energy. 6/

C.1 SECTOR POLICY REVIEW, PLANNING AND PROGRAMMING

Basis for Action

28. There is a need to integrate sustainable development considerations with agricultural policy analysis and planning in developing countries. The recommendations should contribute directly to development of realistic and operational medium- to long-term plans and programmes, and thus to concrete actions. Support to and monitoring of implementation should follow.

Objectives

29. The major objectives of this programme would be: (a) strengthening of Ministry of Agriculture and/or Ministry of Planning or other appropriate institutions, in terms of financial as well as human resources; (b) strengthening the supporting information and higher education systems in the countries. This includes the information system for policy, planning and monitoring, institutional diagnosis for policy and strategy preparation and implementation and for project formulation; and (c) regional and international cooperation for the exchange of information and experience or incorporation of environmental and sustainable development considerations in sectoral policy analysis.

Activities

30. The activities would focus on reviewing the relationship to sustainable agricultural development of:

a. key macroeconomic variables, e.g. foreign trade policies, price policies (including subsidies), interest rate, exchange rates, structural adjustment programmes, etc.

b. population growth and distribution trends;

c. food security;

d. database and information systems;

e. natural resource use and impact of policies;

f. environmental considerations (e.g. major areas of environment concerns, land tenure policies, etc); and

g. national capabilities in SARD policy analysis, formulation and monitoring.

31. Based on the above analysis, sector review to recommend actions for integration of environment and sustainable development considerations into agricultural policies could be undertaken, and finance and human resources implications identified. The follow-up implementation could include:

a. Activities based on policies for sustainable agricultural development;

b. Activities for developing a capacity for SARD policy analysis, including institutions strengthening, training and monitoring and evaluation.

C.2 PEOPLES PARTICIPATION AND DEVELOPMENT OF HUMAN RESOURCES

Basis for Action

32. This component bridges policy and integrated resource management. People-centred rural development is the foundation for sustainability; the greater the degree of community control over the resources on which it relies, the greater will be the incentive for human resources development. At the same time, policy instruments to reconcile long-run and short-run requirements must be set by the national Government. The approaches focus on fostering self-reliance, cooperation, providing information, and supporting user-based organizations.

33. The stress is on change in management practices, building agreements for changes in resource utilization: the rights and duties associated with use of land, water and forests, the functioning of markets, prices, and the access to information, capital and inputs. This would require training and capacity building to assume greater responsibilities in sustainable development efforts.

Objectives

34. The main priority objectives could be: (a) the development of decentralization policies for rural development; (b) the concurrent adjustment of institutions; (c) the development of rural organizations and of the interactive processes with government institutions; and (d) development of human resources for the above purposes.

Activities

35. Information and capacity-building, with an emphasis on the role of voluntary organizations (VOs) in promoting power-sharing between central authorities and the local level. A major task would be to gather information on human resources, institutions and the roles of Governments, local communities and VOs in social innovation.

36. National programmes to mobilize people and institutions towards full participation in achieving the local goals of sustainable agricultural and rural development. Support for this would include information collection and

analysis; organization of farming population; re-organization or strengthening of rural institutions including farmers' cooperatives, agricultural extension services, technical and professional training, applied research and programme development.

37. Support to non-formal education or extension and technology transfer to farm populations. Investment would be required to augment existing infrastructures for human and institution development, particularly in environmentally fragile and neglected zones.

C.3 INTEGRATED PRODUCTION SYSTEM MANAGEMENT AND DIVERSIFICATION OF RURAL INCOMES

Basis for Action

38. Agriculture needs to be intensified to meet future demands for commodities and to avoid further expansion onto marginal lands and encroachment on fragile ecosystems. Increased use of external inputs and development of specialized production systems tend to increase vulnerability to environmental stresses and market fluctuations. There is, therefore, a need to intensify agriculture by diversifying the production systems for maximum efficiency in the utilization of local resources while minimizing environmental and economic risks. Where intensification of farming systems is not possible other opportunities could be identified and developed (cottage industries, wildlife utilization, aquaculture and fisheries, etc.).

Objectives

39. The main objectives of the programme are to improve sustainable farm productivity, raise income, reduce risks and increase the welfare of rural families. The programme could focus on understanding farmers' circumstances and seeking their active involvement in improving their income and living conditions. Its emphasis could be on technology development for sustainable production systems based inter alia on the indigenous technologies and the use of biological and ecological processes. The efficient utilization of external inputs could be maximized and their use and impact on the environment minimized. The programme will focus on the improvement of living conditions.

40. The production systems management programme could enable a systems approach to identification, formulation and implementation. The overall scope is loosely defined to facilitate the inclusion of a variety of production systems (e.g. agro-forestry, aquaculture, and inland fisheries).

Activities

41. Preparation and implementation of programmes for Integrated Production Systems Management and Rural Income Diversification. The approach could be participatory, relying on involvement of rural people and building on their experience, aspirations and resource endowments. It would seek to decentralize decision-making by providing incentives and resources for initiatives by local communities and by enhancing their status and management capacity, including that of women.

42. Implementation of farming systems development methodologies will look for technologies and crop, livestock and tree systems which use available biological diversity, promote biological control of pests and weeds and draw on multiple sources of nutrients. This would be achieved through dialogue with rural communities, farm surveys, on-farm testing of technologies and farm management methods. The effects of technical innovations and incentives on farm-household incomes and well-being will be analysed.

43. Flexible programmes and projects to address specific constraints and needs of agro-ecological zones. Linkages with other ICPF/SARD programmes could be developed, in particular with those related to input and output marketing systems, credit and small rural industries. The approach would result in a set of sustainable (socially, ecologically and economically viable) crop and livestock systems which are replicable and can be extended through credit and investment programmes.

C.4 LAND RESOURCES CONSERVATION AND MANAGEMENT

44. This ICPF/SARD Programme is constituted by two components, which are also related to Agenda 21's action to control land degradation: (i) Land use planning and (ii) Land Conservation and Rehabilitation. This programme is related to the item on an integrated approach to planning and management of land resources described in cluster B. above.

i - Land Use Planning

Basis for Action

45. Inappropriate and uncontrolled land uses are a major cause of degradation and depletion of land resources. Present land use often disregards the actual potentials, carrying capacities and limitations of land resources as well as their diversity in space. In the future, the need to increase food production to meet the needs of a population expected to double over the next 60 years will enormously increase the pressure on all natural resources, including land. Many of the technical solutions are known and if they can be efficiently applied, needs could be met, living standards raised and the quality of life improved on a sustainable basis for the world's population. What are lacking are the methods, the knowledge of land resources potentials and limitations, the human resources capacities and institutional structures as well as the political will to enable wise decisions to be made at all levels regarding the allocation, management and conservation of land resources and the monitoring of land use.

Objectives

46. Functioning systems could be in place by year 2000 at international, national and local levels to ensure optimum allocation of land and related resources for competing needs, as an essential basis for the design and application of integrated and comprehensive development programmes within each ecological zone, region or combination of physical, social and economic conditions. At each level, such a system would consist of three major

components: information gathering and storage; application of methods and techniques for using the information to select and design land uses; and an appropriate institutional framework.

Activities

47. The following sequence could be applied at each level (national, provincial, local):

a. Establishment and development of appropriate bodies responsible for land resources planning, conservation and monitoring, and the necessary linkages between them.

b. Establishment and development of the necessary technical capacities to support these bodies for land resource evaluation, land zoning, land use planning, land use monitoring and control;

c. Establishment at each level of the appropriate methodology and procedures to identify development planning zones on ecological, physiographic, administrative, social and economic grounds; collect the necessary information for planning and programme development purposes; establish data storage systems; identify land use options in terms of products, production systems, input/output relationships, environmental impact; selection of the optimum combination of options in relations to goals and objectives; design of the implementation programme, including the necessary policy, economic and legal framework; provision of additional funds, if required; monitor the conditions and status of land, water and other natural resources.

d. Establishment at each level of the necessary consultative process with land users for the elaboration and acceptance, after modification, of the proposed programmes, with their attendant policies legal and economic instruments.

ii - Land Conservation and Rehabilitation

Basis for Action

48. Land degradation, particularly soil erosion, is now the most widespread and, arguably, the most important environmental problem facing developing countries. The problem is serious because the productivity of huge areas of land is declining just when populations are increasing rapidly and the demand on the land to produce more food, fibre and fuel is growing. Efforts to control land degradation in most developing countries have had only limited success to date: generally, these efforts have not been sustained and they have been too small in scope to have had very much impact. Well-planned, long-term national and regional land conservation and rehabilitation programmes with strong political support and adequate funding are now needed. While land use planning and land zoning should provide long-term solutions to the land degradation problems, it is urgent to arrest land degradation and launch land conservation and rehabilitation programmes in the most critically affected or vulnerable areas.

49. FAO's programme for "The Conservation and Rehabilitation of African Lands" and similar schemes planned for Asia and the Pacific, and Latin America and the Caribbean will provide a framework for action and collaboration between participating countries, donor organizations, technical assistance agencies and development banks. But clearly, much work will have to be done in developing national policies and strategies, training, research and in the actual implementation of programmes. To be effective, the programmes will require strong political and institutional support, adequate numbers of trained staff and a considerable amount of money.

Objectives

50. The national programmes can only increase in numbers, size and scope as staff are trained, experience is gained and institutions are developed. The main objectives in each country could be the assessment, mapping and monitoring with particular attention to most critical areas; development of national policy, priorities, programmes and strategies for land conservation and rehabilitation; development of related research capacities and implementation capacities, including staff training; establishment of a field advisory support service to land users (including staff training); launching rural community-led programmes of land conservation and rehabilitation.

Activities

51. National action could include:

a. improving the national inventory of land resource conservation and rehabilitation requirements, establishment of a land resource degradation database, investigation of causes of land misuse and identification of priorities;

b. encouraging participation by helping land users to launch programmes of land conservation and rehabilitation, organizing demonstrations providing technical advice and training and promoting awareness of land productivity and conservation issues;

c. developing national institutions to support high level advisory commission for land resource conservation and rehabilitation, strengthen government conservation services, encourage work of NGOs, create legal framework, review workforce and training programmes, identify research needs and develop nation-wide land conservation programmes.

52. Regional networks can facilitate experience sharing and provide effective information exchange, advanced training in specialized areas and cooperation in conservation research.

53. At international level, long-term financial support would need to be assumed and coordinated work organized between technical assistance agencies, financing institutions and NGOS.

C.5 WATER RESOURCES FOR AGRICULTURE

Basis for Action

54. Agriculture is the main user of fresh water. Yet in many areas it is the limiting factor to increased agricultural production because of shortages, excess or waste. Water wastage in agriculture is not only one of the main causes of unsustainable production but also a cause of land degradation (erosion, waterlogging, soil salinization), water pollution, water-borne diseases, disasters (floods) and other environmental problems. Most present irrigation systems do not meet the criteria of sustainability. This programme is related to action under Freshwater Resources presented to the Preparatory Committee and to the Dublin Conference on Water and the Environment.

Objectives

55. The overall objective of the International Action Programme on Water and Sustainable Agricultural Development (IAP-WASAD) is to assist in the achievement of sustainable agricultural development through optimum use and conservation of water. More specifically, the objectives of the programme are to assist Governments to develop or update a national water use policy within the framework of the overall economic and agricultural development plan, recognizing the demand for freshwater by other economic sectors; develop an integrated agricultural water use and conservation strategy to support sustainable agricultural development, encompassing crop and livestock production, fisheries, forestry and other intersectoral issues related to agricultural development; formulate and implement sustainable water programmes aimed at fulfilling the national goals of food security and self-reliance, import substitution, crop diversification, etc.; strengthen institutions and develop human resources to support national programmes on agricultural water use and conservation.

Activities

56. A programme at regional, subregional and country levels would enable comprehensive planning, inter-sectoral collaboration, identifying projects that support one another, minimize overlap and conflicts, and ensure optimum utilization of financial and human resources. The elements of this programme could be:

a. National water use policy would include estimation of the nation's total surface and groundwater resources and allocation of water to the agricultural sector, including the re-use of wastewater, water legislation, water rights and water conservation.

b. Agricultural water use and conservation strategy would include rainfed agriculture and irrigated farming in food production; large-scale versus small-scale water programmes; conservation programmes to support rainfed agriculture, livestock production, aquaculture and agro-forestry; rehabilitation of existing irrigation projects and development of new ones.

c. Development and implementation of water programmes, would include evaluation of irrigation and rainfed agriculture development projects; feasibility studies and projects to rehabilitate existing projects or develop new projects; introduction of new technologies to increase crop yields and water use efficiency; prevention and control of waterlogging and salinity, including studies and pilot projects in reclaiming waterlogged and saline areas; protection against agricultural and industrial pollution as well as intrusion of sea water; feasibility of safe use of treated municipal effluent in crop production and recharge of aquifers and pilot projects in this area; water harvesting; programmes to predict and manage drought.

d. Institutional strengthening and human resources development would include review and strengthening of institutions that support water resources development programmes; development of mechanisms for inter-sectoral collaboration; adaptive research, data collection, monitoring and extension services; review and development of existing human resources; increase the number of trained persons; develop technical guidelines and extension bulletins to support development programmes.

C.6 CONSERVATION AND UTILIZATION OF GENETIC RESOURCES

Basis for Action

57. This Programme is part of a set of activities on biodiversity conservation and use for food, agriculture, forestry and fisheries and of the overall International Cooperative Programme Framework for SARD. It contributes to addressing the issue of food security. This programme includes plant and animal genetic resources and is therefore described as two separate components, and is related to actions presented to the Preparatory Committee under Biological Diversity.

i - Plant Genetic Resources for Sustainable Agriculture

Basis for action

58. Plant genetic resources (PGR) are an essential resource to meet future needs for food. Threats to the security of these resources are growing and efforts to conserve and use genetic diversity are underfunded and understaffed. Genebanks provide inadequate security and in some instances, the loss of plant genetic diversity in genebanks is as great as it is in the field. Therefore, there is an urgent need to strengthen global initiatives for security and sustainable use of plant genetic resources.

Objectives

59. The primary objective is to safeguard the world's priceless heritage of genetic diversity, while preserving it to use sustainably in future. This includes the development of international agreements to facilitate the conservation and use of plant genetic resources, networks of ex situ base collections and in situ conservation areas; Global Information and Early Warning Systems on PGR; the State of the World's PGR; a Global Plan of Action on Plant Genetic Resources; and an International Fund for PGR. Special

emphasis could be placed on the characterization, evaluation and utilization of PGR particularly for the minor crops and other underutilized or non-utilized species of food and agriculture, including tree species for agro-forestry.

60. Subsequent action could be aimed at consolidation and monitoring of the networks of ex situ and in situ conservation; further evaluation and use of plant genetic resources; realization of equitable sharing of benefits from the use of plant genetic resources.

Activities

61. The main activities could focus on:

a. the development and strengthening of institutional capacity, structures and programmes for conservation and use of PGR;

b. establishment of ex situ base collection networks;

c. strategies for in situ conservation areas;

d. establishment of global information and early warning systems on PGR;

e. preparation of periodic State of World's Report on PGR;

f. organization of a Fourth International Conference on PGR;

g. preparation of a rolling global Plan of Action on PGR;

h. development of mechanisms to realize Farmers' Rights;

i. development of further legal instruments, as appropriate;

j. strengthening of research on PGR utilization with the objectives of sustainable agriculture and rural development in view;

k. development of multiplication/propagation, exchange and dissemination facilities for PGRs (seeds and planting materials); monitoring, control and evaluation of plant introductions.

62. Further analysis of needs and gaps in the Global System on PGR; Consolidation of activities and monitoring progress will be needed subsequently.

ii - Animal Genetic Resources for Agriculture

Basis for action

63. The need for increased quantity and quality of animal products and for draught animals calls for conservation of the existing diversity of animal breeds to meet future requirements, including those for use in biotechnology. Some local animal breeds have unique attributes for adaptation, disease

resistance and specific uses, which in addition to their socio-cultural value should be preserved. These local breeds are threatened by extinction as a result of the introduction of exotic breeds and of changes in livestock production systems.

Objectives

64. The breeds of major farm animals and domesticated grazing animals, should be preserved through in situ and mostly ex situ preservation facilities. These breeds should be characterized and evaluated. Genetic material and related information should be stored and made accessible to users. Staff should be trained in conservation and use of animal genetic resources. Presently under-utilized breeds, including those of semi-domestic animals, should be more widely exploited.

Activities

65. At national level, preparation and/or completion of national inventories of available animal genetic resources. Cryogenic storage could be given priority over characterization and evaluation. Training of nationals in conservation and assessment techniques would be given special attention.

66. Further development of Regional Animal Gene Bank capacities to store material and support the above national activities is necessary. Regional assessment and monitoring of breeds flow across national boundaries could be promoted. Information and genetic material exchange with national programmes and other regional banks and feeding data to the Central Data Bank could be further developed.

67. At the global level, priorities could be: processing, storage and analysis of animal genetic data; this would include production of a World Watch Kit and Early Warning of endangered breeds; global assessment, scientific and intergovernmental guidance of the Programme and review of regional and national activities; development of methodologies, norms and standards (including international agreements), monitoring of their implementation and related technical and financial assistance.

C.7 INTEGRATED PEST MANAGEMENT IN AGRICULTURE

Basis for action

68. World food demand projections indicate an increase by 50 per cent by the year 2,000; more than double again by 2050. Conservative estimates put crop losses caused by pests between 25 and 50 per cent. Pests affecting animal health also cause heavy losses and in many areas prevent livestock development. Chemical control of agricultural pests has dominated the scene but its overuse had adverse effects on the farm budgets, human health and the environment as well as international trade. New pest problems continue to develop. Integrated Pest Management which combines biological techniques, genetic resistance, and appropriate farming practices and minimizes the use of pesticides is the best option for the future, as it guarantees yields, reduces costs, is environmentally friendly and contributes to the sustainability of agriculture. Integrated Pest Management should go hand in hand with the

establishment of appropriate pesticide management to allow for pesticide regulation and control including of trade, and for the safe handling and disposal of pesticides particularly those that are acutely toxic and persistent. This programme is related to action under toxic chemicals presented to the Preparatory Committee.

Objectives

69. By the year 2000 each country could have reliable plant protection and animal health services; integrated pest management techniques within the reach of farmers; mechanisms to control distribution and use of pesticides; and for the implementation of other aspects of the FAO International Code of Conduct on Pesticides; operational and interactive networks among farmers, research and extension services for the promotion of integrated pest management; under the sponsorship of FAO and in cooperation with other research institutions and the aid-providing institutions, a consultative process should be in place to respond to national and regional needs to develop integrated pest management programmes.

Activities

70. These could include:

a. Development of national systems and institutional capacities to control the import, distribution and use of pesticides;

b. Formulation and implementation of strategies for integrated pest management systems which will aim at improving yields, farmers' profitability and minimizing the impact of pesticides on human health and the environment;

c. Strengthening of national agricultural research and extension programmes and involvement of farmers to deal effectively with integrated pest management issues;

d. Strengthening of the international agricultural research system to support countries with information, technologies, training, institutional strengthening leading to a comprehensive programme on components of integrated pest management;

e. Advice to international, regional and national programmes in the development and application of integrated pest management for those crops where there is pesticide overuse;

f. Adoption of policies to phase out the use of acutely toxic and persistent pesticides and to discontinue any form of direct or indirect subsidy on the purchase and utilization.

C.8 SUSTAINABLE PLANT NUTRITION

Basis for Action

71. Plant nutrient depletion in developing countries is serious and therefore it is important to maintain soil productivity. To do this it is desirable to reinforce by FAO's sustainable plant nutrition programme. In Sub-Saharan Africa, nutrient output from all sources currently exceeds inputs by a factor of 3 or 4, the net loss being estimated at some 10 million tonnes per year. As a result more marginal lands and fragile natural ecosystems are put under agricultural use, thus creating further land degradation and other environmental problems.

Objectives

72. The programme has to be seen in the framework of the "Integrated Plant Nutrition Systems" (IPNS), an approach which is economically viable, environmentally sound and socially acceptable. It would aim at ensuring a sustainable supply of plant nutrients to increase future yields without harming the environment, thus maintaining national soil productivity. It would seek to optimize possible plant nutrient sources, organic (including biological nitrogen fixation) and mineral, in an integrated approach. The objectives of the programme could be to increase and sustain soil productivity to meet present and future demands; and to enhance the quality of land resources, and protect water resources, avoiding plant nutrient depletion.

Activities

73. This programme could study plant nutrient depletion and its impact on soil productivity; formulate national strategies and targets for the maintenance and improvement of soil productivity; alternative options for plant nutrient supply to meet projected demand; practices to increase the efficiency of plant nutrient applications; national fertilizer policies.

74. Activities could be undertaken within country and/or regional projects in three phases:

a. an average six-month phase study to establish the status of the soil fertility and plant nutrient depletion and the sustainability of current plant nutrition practices and techniques, and to formulate national strategies and proposals for sustainable plant nutrition;

b. a ten-year project of technology development and dissemination, leading to capacity-building and supply of plant nutrients (soil amendments and mineral fertilizer) to counteract plant nutrient depletion and enhance agricultural production on a sustainable basis. This second phase would gradually lead to a third interactive process involving farmers, research and extension services. Such projects could be implemented on an individual country basis, subregional level, subcontinent level or specific group of countries.

C.9 RURAL ENERGY

Basis for Action

75. Energy supplies in developing countries are not commensurate with their development needs, are highly priced and unstable. In rural areas, the chief sources of energy are fuelwood, crop residues and manure, together with animal and human energy. More intensive energy inputs are required for increased productivity of human labour and for income-generation. To this end, rural energy policies and technologies should promote a mix of fossil and renewable energy sources that is itself sustainable and ensures sustainable agricultural development. Rural areas provide energy supplies in the form of wood. The full potential of agriculture and agro-forestry, as well as common property resources, as sources of renewable energy is far from being realized. The attainment of sustainable rural development is intimately linked with energy demand and supply patterns. This programme is related to actions under Energy and Forests presented to the Preparatory Committee.

Objectives

76. Two types of projects would be required at the country level and municipal level with the objective of providing the necessary energy for household, agriculture and agro-industry needs; and to assist in the energy transition in rural communities from informal markets based on wood fuels to a better structured one based on more diversified sources of energy, not only for thermal energy, but also for power generation.

Activities

77. The proposed programme could be made operational by:

a. Establishment of a high level task force to prepare an Approach Paper for Rural Energy for the country. This phase may extend up to six months.

b. Preparation of micro-level pilot projects in one or more selected areas and preparation of area-based integrated rural energy plans and project documents for these areas.

c. Implementation of the pilot projects and development of a suitable institutional mechanism at the country level and in the selected areas to implement and monitor the projects. The two phases for preparation and implementation of the pilot projects may extend from 1-2 years.

d. Extension of the pilot integrated rural energy projects to other micro-regions in a phased manner, planning, implementation and monitoring of the integrated rural energy planning programme; organizing man-power development and training programme for professionals and others involved in the programme at different levels; introduction of the computer modelling system for the rural energy sector. This phase could eventually result in a regular operational programme.

Notes

1/ related to Agenda 21's action for an integrated approach to planning and management of land resources and to combat land degradation);

2/ related to Agenda 21's action on freshwater resources and the Dublin Conference on Water and the Environment)

3/ related to Agenda 21's action on Biological Diversity)

4/ related to Agenda 21's action on environmentally sound management of toxic chemicals)

5/ related to Agenda 21's action to combat land degradation, soil nutrients depletion and pollution of fresh water resources)

6/ related to Agenda 21's action on energy

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CONSERVATION AND DEVELOPMENT OF FORESTS:

OPTIONS FOR AGENDA 21

Report of the Secretary-General of the Conference

I. INTRODUCTION

1. At the second session of the Preparatory Committee for the United Nations Conference on Environment and Development the Secretariat of the Conference was requested to re-examine its work on document A/CONF.151/PC/27 on Conservation and Development of Forests, in line with decision 1/14 of the first session of the Preparatory Committee, taking into consideration the various submissions made during the meetings of Working Group I and the Ad hoc Subgroup on Forests, and as fully and as comprehensively as possible to analyse and address the issue of forests.

2. It further requested the Secretariat to take due account in its work in this area of the relevant paragraphs of the Bergen Declaration, the Tlatelolco Platform on Environment and Development, and the Final Declaration adopted by

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the Ministerial Conference on Environment and Development for Asia and the Pacific, as well as the results of the regional Conference for Africa, organized in accordance with General Assembly resolution 44/228, section II, paragraph 13 and decision I of the Preparatory Committee at its organizational session.

3. While addressing the issue of Agenda 21 it will be necessary to take into consideration some of the specific characteristics of forests as for example the much longer planning periods and the trees growing time, which are inherent to forest management, together with the enormous diversity found in the several forest types and geographical environments. Attention should be also given to the different cultural and economic situations of the countries involved and the benefits populations obtain from their forest resources.

4. For the preparation of this document, the UNCED Secretariat has received the support of the members of its Working Party on Forests and from several intergovernmental and non-governmental organizations such as FAO, ITTO, IUCN, UNCTAD, UNEP, UNESCO, the WB, and WRI, as well as from several independent experts.

5. As explained in the background paper (Document A/CONF.151/PC/64), the main issues related to conservation and development of forests are linked to each other, other issues and other sectors, particularly in respect of agriculture, climate change and biodiversity. Background papers on these particular sectors are also presented to this Preparatory Meeting. 1/ Furthermore, the forest related activities are closely linked with the social and economic situation of countries, with policy decisions affecting, for example, land use, trade and energy consumption. The state of forest and vegetation cover in highlands will influence soil conservation and water cycles. An adequate provision of forest products is necessary to enhance the living conditions of people. The following options developed through the Working Party on Forest should be regarded as preliminary and indicative in nature. The action proposals referred to will need to be further refined and elaborated in light of the discussion by the Preparatory Committee of the principles for a consensus on forests presented in Document A/CONF.151/PC/65.

1/ A/CONF.151/PC/61.
A/CONF.151/PC/57.
A/CONF.151/PC/66.

II. OPTIONS FOR AGENDA 21

FOREST CONSERVATION AND DEVELOPMENT - GLOBAL OBJECTIVE

6. There is an urgent need to put forests and forest resources within a more appropriate context with respect to the role they play in human welfare and the contributions they provide to realization of a better quality of life to mankind. Too often they have been perceived as a land or timber bank from which everybody can draw without further accounting. That time is now gone and the perception of their role is becoming clearer as well as the price that will be paid if what is left of them continue to be destroyed. One major global objective is therefore proposed for consideration:

"ACHIEVE CONSERVATION AND RATIONAL UTILIZATION OF ALL FORESTS WITHIN THE CONTEXT OF SUSTAINABLE DEVELOPMENT"

7. To achieve such a global objective a series of programmes should be put into place covering different aspects of forests conservation, development and rational utilization. Some of them will rely on reinforcing or redressing existing activities being carried by international, regional or national organizations. Others will need to be put into initial operation while selecting or establishing the most adequate institution or structure for their further development.

8. PROPOSED PROGRAMME AREAS

A. DEVELOPING AND INTENSIFYING FOREST INVENTORIES AND LAND AVAILABILITY ASSESSMENT FOR AFFORESTATION

B. DEVELOPING MECHANISMS FOR GLOBAL/REGIONAL/NATIONAL AFFORESTATION AND REFORESTATION INCLUDING PROVISIONS FOR LARGE-SCALE GLOBAL FUNDING FOR FORESTS

C. ASSESSING POTENTIAL IMPACT ON FORESTS OF CLIMATE CHANGE AND INITIATING IN-DEPTH STUDIES ON THE CARBON CYCLE RELATING TO DIFFERENT FOREST TYPES

D. SUPPORTING EXISTING AND ENCOURAGING EXPANSION OF PROGRAMMES FOR PROTECTION OF SELECTED FOREST ECOSYSTEMS

E. ENCOURAGING AND SUPPORTING LARGE-SCALE PLANTING PROGRAMMES

F. ENCOURAGING REGIONAL/NATIONAL REHABILITATION OF DEGRADED LANDS

G. DEVELOPING AND ENCOURAGING EXPANSION OF COMMUNITY AND SOCIAL FORESTRY IN DEVELOPING COUNTRIES

H. ENCOURAGING INDUSTRY AND TRADE IN FOREST PRODUCTS BASED ON SUSTAINABLY MANAGED FOREST RESOURCES

I. DEVELOPING MORE TRAINING AND RESEARCH AND DISSEMINATING FACILITIES FOR RESEARCH RESULTS

J. DEVELOPING NATIONAL PROGRAMMES ON FOREST ACCOUNTING AND MECHANISMS FOR ASSESSING THE ECONOMIC VALUES OF FORESTS

A. DEVELOPING AND INTENSIFYING FOREST INVENTORIES AND LAND AVAILABILITY ASSESSMENT FOR AFFORESTATION

1. Basis for Action

(a) Regular inventories covering all forests are not readily available for the purpose of monitoring changes in global forest cover. Status updates from year to year of world forest cover and biomass volumes are crucial to combat deforestation, increase forest management quality, encourage better planning and afforestation programmes and provide a better picture of the relation between forests and global warming.

2. Objectives

(a) Provide planners, politicians and other decision-makers with accurate and sound resource information on the extent, quality and quantity of forests resources as soon as possible and on a regular basis.

(b) Strengthen existing or establish new mechanisms for the development of permanent forest resources monitoring and assessments.

3. Activities

(a) Increase the availability of remote sensing facilities for monitoring global forest cover and the technology for interpretation of satellite images, especially to developing countries at national and regional levels.

(b) Increase the availability, at national and international levels, of information based on regular land assessments for purposes of afforestation and forest management, to countries and national, regional and international planning and funding agencies.

(c) Encourage the extension of remote sensing inventory survey technology to ecosystem surveys in order to have early warning of possible ecological disaster and to take pre-emptive action.

(d) Develop assessments of financial and technological needs of developing countries to strengthen their ground survey capabilities. Based on such assessments take steps to strengthen developing countries' survey capabilities. Ground truth surveys will still be essential to adjust, complement or confirm remote sensing surveys.

(e) Establish an intergovernmental global forest monitoring panel which meets regularly to assess and coordinate all available inventory information. The work of the panel could be focused only on that essential task. The results of the work could be made available to countries and institutions, particularly funding institutions.

B. DEVELOPING MECHANISMS FOR GLOBAL/REGIONAL/NATIONAL AFFORESTATION AND REFORESTATION INCLUDING PROVISIONS FOR LARGE-SCALE GLOBAL FUNDING FOR FORESTS

1. Basis for Action

(a) International funding for forest activities, particularly in the developing countries, is essential. Such funding needs would initially increase as these countries change over to sustainable management methods and expand their forest related activities. At present forest funding is mainly centred on intergovernmental organizations especially funding bodies of the United Nations. In addition there is increasing and significant funding inputs from bilateral institutions.

(b) The magnitude of funding needs will increase substantially in the future when afforestation targets have been determined based on survey information. Without adequate funding and coordination mechanisms, donor and loan organizations may find totals required extremely large. A global funding mechanism, with funding focused on the forests sector, could probably shoulder such a burden in the long term.

(c) Harmonization of afforestation and reforestation needs of countries, especially developing countries, as well as their other needs related to forest activities, would help facilitate coordinated solutions that integrate the developmental and conservation imperatives of forests. A global funding mechanism could help necessary harmonization.

2. Objectives

(a) Establish a global funding mechanism to provide funding for afforestation and reforestation projects and related forest action.

3. Activities

(a) Undertake feasibility study of the concept of a global funding mechanism, taking all relevant facets into account, including models of global afforestation needs, in collaboration and cooperation with relevant international and regional organizations, institutions, and individuals of standing in this field.

(b) Assess short and medium term funding needs for forest related activities, particularly, but not solely, in developing countries.

(c) Investigate innovative ways in which a global forest funding mechanism could be established and operated.

C. ASSESSING POTENTIAL IMPACT OF CLIMATE CHANGE ON FORESTS AND INITIATING IN-DEPTH STUDIES ON THE CARBON CYCLE RELATING TO DIFFERENT FOREST TYPES

1. Basis for Action

(a) Forests play a crucial role in combating global warming, but there is still considerable uncertainty with regard to the information on the carbon

exchange between the different forests types and the atmosphere. Such information is necessary to assess the amount of afforestation or reforestation needed to combat a build-up of atmospheric carbon.

(b) Assessment of the potential impact on forests of climate change is necessary to determine how much, when and in what way a particular forest ecosystem could be affected by abrupt changes in precipitation and temperature patterns. This information is essential for the formulation of afforestation plans as it will affect the choice of species used and the silvicultural activities necessary.

2. Objectives

(a) Provide planners, foresters and scientists with adequate supporting and planning tools for the formulation of medium term and long term forest management and plantations plans.

(b) Establish a continuing process of research and in-depth studies on the assessment of potential impact on forests by climate change.

3. Activities

(a) Cooperate between international organizations and other institutions within and outside the United Nations family, which have the responsibilities to continuously monitor climate change and global warming, eg the International Negotiating Committee (INC) and the Intergovernmental Panel on Climate Change (IPCC).

(b) Develop research and evaluate alternate scenarios relating to the type of species and methodology necessary, as well as the suitable extent of afforestation, bearing in mind the economic, social and environmental aspects of such afforestation.

(c) Disseminate results of research and studies to forest organizations and funding organizations at all levels.

D. SUPPORTING EXISTING AND ENCOURAGING EXPANSION OF PROGRAMMES FOR PROTECTION OF SELECTED FOREST ECOSYSTEMS

1. Basis for Action

(a) Some programmes already exist to set aside selected forested ecosystems as protected areas, such as under the Ramsar Convention, the World Heritage Convention, the Western Hemisphere Convention. Support for the expansion of such activities will ensure the safeguarding of genetic materials and ecosystems, much of which may still be unknown, for future generations. (See also Biodiversity: Options for Agenda 21; Document A/CONF.151/PC/42/Add.4).

2. Objectives

(a) Maintain significant areas of forest ecosystems under protection as a basis for biological diversity conservation, research areas on forest ecology and protection of cultural heritage.

3. Activities

(a) Establish a system of forests under protected areas and encourage a network of representational repositories of forest genetic materials and ecosystems.

(b) Encourage the study, monitoring and listing of such protected areas and their genetic contents and ecosystems values.

(c) Create an international register of protected areas in cooperation and coordination with existing systems of registering such as by IUCN, and those under the above mentioned conventions.

(d) Reinforce action by international and national organizations for the establishment, management and monitoring of protected forest areas.

E. ENCOURAGING AND SUPPORTING LARGE-SCALE PLANTING PROGRAMMES

1. Basis for Action

(a) Afforestation, by means of plantations, is mainly but not entirely, the most practical way so far known to increase the plant biomass in the minimum of time. Natural expansion of the natural forests is limited by the long time-frame for such trees to re-colonize degraded areas and reach maturity. Plantations are also the only known means of tree regeneration capable of covering vast expanses and of rehabilitating extensive marginal and degraded lands. Increasing forest cover is not only beneficial in respect of climate change but also as increasing employment opportunities, production of wood and non-wood materials including energy and other services. The promotion of adequate multi-species afforestation and regreening of arid and semi-arid regions (e.g. Sahel) could be supported.

2. Objectives

(a) Recover the balance of global forest cover worldwide and by regions and nations while increasing the levels of goods, services produced and development opportunities to humankind.

(b) Based on sound assessments of the needs and possibilities, establish practical yearly increasing targets, to reach a gross area of plantations of over 12 million hectares by 2010, to be revised regularly in light of new ideas, information and technical developments.

3. Activities

(a) Ascertain land availability for afforestation.

(b) Develop environmental guidelines for their application to massive global plantation programmes.

(c) Establish adequate funding mechanisms and operational structures for these programmes.

(d) Strengthen national forestry institutions by special training for afforestation and further management, including full maintenance of tree crops.

(e) Encourage public and private sector's action in afforestation (from government to independent farmers and enterprises) through the mobilization of all sectors of society while ensuring local participation of youth, women, communities and indigenous people.

F. ENCOURAGING REGIONAL/NATIONAL REHABILITATION OF DEGRADED LANDS

1. Basis for Action

(a) Woodlands and marginally wooded areas occupy a substantial portion of the earth's land area. Left as they are, many of these areas can deteriorate into arid and semi-arid land, thus increasing the area of deserts. The re-greening of these areas will create livelihood for local communities, increase the carbon reservoir capacity of the existing forests, and help combat climate change while providing better opportunities to local inhabitants.

2. Objectives

(a) Contain the currently desertified areas and prevent further desertification.

3. Activities

(a) Launch forest rehabilitation plans on former woodlands, through agroforestry, rural community trees and forest plans and other equivalent systems.

(b) Expand and re-orient existing programmes such as the Tropical Forestry Action Programme, so as to accelerate action at the national and regional levels.

(c) Further expand and reinforce wildlife management and protection programmes including those related to migratory species conservation.

G. DEVELOPING AND ENCOURAGING EXPANSION OF COMMUNITY AND SOCIAL FORESTRY IN DEVELOPING COUNTRIES

1. Basis for Action

(a) In parallel with plantation efforts developed through official action, thousands of villagers in developing countries (as well as some developed countries) could be encouraged to plant trees for fuelwood, food and fodder and protection. Trees with commercial and utilitarian uses can be planted with consequent benefit on villagers as livelihood tree plantations or as additional income. Women and youth have contributed significantly to such efforts in the past. The role of trees and wooded plots in urban areas is increasingly appreciated for shade and other services which contribute to a better quality of life.

2. Objectives

(a) Improve the livelihood of villagers through the promotion and establishment of expanded wooded areas and plots in their communities.

3. Activities

(a) Promote and support expansion of social plantations, which could possibly be dovetailed into rural development and similar schemes.

(b) Develop and expand special training for foresters, extentionists, and planners in the area of small scale forestry.

H. ENCOURAGING INDUSTRY AND TRADE IN FOREST PRODUCTS BASED ON SUSTAINABLY MANAGED FOREST RESOURCES

1. Basis for Action

(a) The economic value of forests, principally as timber, has been, and still is, the most visible developmental aspect of forests. Wood is the most common forest raw material used today by industry. Others include rubber, resins and naval stores. Only a very small portion of forests in developing countries are sustainably managed. A substantial increase in the proportion of sustainably managed forest is required.

2. Objectives

(a) Assure that all timber and timber products used by industry or entering the national and international trade originate from sustainably managed forests by the year 2000.

3. Activities

(a) Intensify programmes for research, promotion and training in sustainable management of forests.

(b) Stimulate national and international financial and technical assistance to facilitate such programmes.

(c) Encourage and strengthen international organizations and institutions already promoting sustainable management practices, such as FAO, UNESCO, ITTO. Support the implementation of the ITTO Guidelines.

(d) Encourage dialogue in appropriate fora, as for example GATT, to mitigate trade restrictions on timber products of developing countries.

(e) Promote substantial expansion of local processing of wood products in developing countries.

(f) Promote removal of market barriers of manufactured and processed timber from developing countries.

I. DEVELOPING MORE TRAINING AND RESEARCH AND DISSEMINATING FACILITIES FOR RESEARCH RESULTS

1. Basis for Action

(a) An intensive and widespread campaign to facilitate change over to sustainable management practices in developing countries' forests is necessary. Forest research has received insufficient attention and support, particularly when compared with support given to the agricultural sector. Forest research needs to be expanded but also re-oriented towards the real needs and possibilities of developing countries in order to respond to them and to provide solutions which are compatible with the nations ecological and economic conditions. (See also Environmental Education. Documnt A/CONF.151/PC/55).

2. Objectives

(a) Provide forest managers, planners and researchers with know-how, methodologies and sound data for the sustainable management of forests and woodlands.

3. Activities

(a) Strengthen and encourage international organizations action towards the promotion and support for forest sustainable management.

(b) Encourage research institutions at national, regional and international levels, to increase research and training activities related to sustainable management of forests.

(c) Strengthen national forestry institutions, policies and programmes to help meet the target to attain sustainable management by year 2000.

J. DEVELOPING NATIONAL PROGRAMMES ON FOREST ACCOUNTING AND MECHANISMS FOR ASSESSING THE ECONOMIC VALUES OF FORESTS

1. Basis for Action

Even though forests are providing a wealth of goods and services to societies, most of these products are not accounted for in the national

accounting systems nor valued adequately within national or regional planning efforts. The general trend is still to consider the value of forests on the sole basis of the timber or some other marketable product without due consideration of the many other products. The lack of adequate perception of those values and practical methodologies to assess their values are the principal causes of the problem. Furthermore most developing countries have inadequate inventories of their forest resources and little control on the changes taking place. (See also Environmental Accounting. Document A/CONF.151/PC/49).

2. Objectives

(a) Provide planners, economists and decision makers at the national level with adequate tools for sustainable management of and decision making upon forest and forest land resources.

3. Activities

(a) Reinforce current action by international organizations and research centres towards the development of practical methodologies to assess the value of forests comprehensively.

(b) Promote the development of procedures by research centres and the further launching by national governmental institutions of systems for National Accounting of Forest Resources.